



**Greater Boston Breathes Better  
Construction Retrofits through Contracts  
March 31, 2006  
Draft Meeting Notes**

**Welcome – Linda Murphy, EPA New England**

Linda Murphy, EPA New England Director of the Office of Ecosystem Protection, welcomed participants to the workshop and provided opening remarks that highlighted the public and environmental health concerns associated with diesel exhaust in New England and particularly in urban areas like Boston.

**Introductions**

Participants introduced themselves, noting whether they are already doing construction retrofits, are thinking of doing retrofits, or are not doing construction retrofits. *Please see Appendix A for a list of workshop participants.*

**Completed Project Story 1: Big Dig**

Paul Stakutis, Director of Environmental Affairs for the Central Artery/Tunnel Project (Big Dig), discussed how and why the Big Dig implemented a Diesel Retrofit Program on stationary equipment operating during construction. Inspections were conducted to ensure compliance with the retrofit requirements.

Project managers noted a significant drop in complaints from neighbors regarding diesel odor and smoke/exhaust after the retrofit technology was installed. The CA/T project created public awareness by identifying retrofitted equipment with stickers. Paul emphasized that positive community relations and goodwill achieved through mitigation efforts such as cleaner fuel and clean diesel technology allowed for the project to maintain its momentum and save money in lost time.

**Completed Project Story 2: MA DEP**

Christine Kirby, the Deputy Director of Transportation at the MA DEP, discussed DEP's retrofit requirements for the CA/T projects, MBTA construction projects, Mass Highway Department construction projects, landfills, and the state revolving fund for water and sewer projects. These groups are required to use retrofit vendors and ULSD from the state contract list. DEP pays close attention to using EPA and CARB verified technologies, and verification and reporting procedures.

### **Completed Project Story 3: Connecticut Department of Transportation**

Donna Weaver, a transportation planner at the Connecticut DOT, presented on the I-95 road widening and Quinnipiac Bridge construction project. This project includes over seven miles of construction work in an urban area that is in non-attainment under the Clean Air Act for PM<sub>2.5</sub> and ozone. CT DOT has created the CT Clean Air Construction Initiative to reduce harmful emissions associated with state construction projects.

The CT Clean Air Initiative began as a partnership between public agencies, private companies, New England regional groups, and consultants. A notice was given to contractors about the retrofit requirements, and the wording of the requirement was flexible to reflect future advancement in technology.

The CT Construction Contract Requirement states:

“All diesel powered construction equipment with engine horsepower (HP) ratings of 60 HP and above, on the project for a period in excess of 30 days shall be retrofitted with Emission Control Devices and/or use Clean Fuels in order to reduce diesel emissions.” Additional General Compliance states that “All motor vehicles and/or construction equipment must comply with all pertinent State and Federal regulations relative to exhaust emission controls and safety.”

Idling limits are also in place, with specific exceptions listed such as if vehicles are forced to remain motionless due to traffic conditions or when the outdoor temperature is below 20°F.

For California Air Resources Board (CARB) diesel resources, see:

[www.arb.ca.gov/diesel/mobile.htm](http://www.arb.ca.gov/diesel/mobile.htm)

For the EPA list of verified technologies, see:

[www.epa.gov/oms/retrofit/retroverifiedlist.htm](http://www.epa.gov/oms/retrofit/retroverifiedlist.htm)

### **Retrofit Technologies Presentation 1: Technology**

Brett Alkins, East Coast Sales Manager for Johnson Matthey discussed diesel oxidation catalysts (DOCs) and diesel particulate filters, giving the range of reduction in PM, CO, and HC for each. He described the processes by which these technologies work to capture the pollutants, noting that diesel particulate filters require upfront analysis (data logging) to ensure appropriate application.

### **Retrofit Technologies Presentation 2: Applications**

Scot Lengel, Vice President of Cummins Northeast, spoke about the emission control systems offered by Cummins Northeast. He showed the range of technologies available through Cummins and the relative PM reduction expected. Common off-road issues include: packaging size, water intrusion for vertical tailpipes, vibration levels, and acoustics and back pressure changes. When deciding on what type of retrofit technology to use, temperature profiles, lead times, ULSD availability, and packaging should be taken into consideration.

## **Large Group Discussion**

An hour was provided for participants to discuss the challenges and resources needed to move forward on voluntary construction retrofits. Participants were asked to consider what would make such voluntary retrofits desirable, what incentives might help, and what challenges need to be overcome.

### **Comments**

- Several participants highlighted the distinction between the scale, dollar value of public projects versus private projects and noted that this should be considered when developing bid specifications that require retrofits.
- One participant noted that universities have enforcement mechanisms, lay out rules ahead of time for contractors, and use the same contractors again and again. Universities are confident that contractors will comply once they understand retrofits are a requirement for the job.
- Several participants stated that using contracting requirements without a blanket regulation would be frustrating, and that contractors want a fair playing field and uniform contract language.

### **Challenges**

- Time: With a private sector project, lead time of 5-10 weeks to get a piece of retrofit equipment isn't feasible. You don't know ahead of time what equipment you'll need, or which equipment will be on-site for 2 days vs. 2 weeks. That much lead time could lose the contractor the job.
- Unforeseen Needs: Oftentimes a project requires the use of an unanticipated piece of equipment and could lead to an increased cost burden as a result of product delay and installation time.
- Enforcement: There need to be resources to enforce bid spec requirements and verify installation to make the requirement effective, or companies will not comply.
- Cost: The Big Dig paid for the retrofit equipment, which made implementing retrofits easier than it would otherwise have been.
- Location: It is much more efficient to put retrofit technologies on your equipment in your shop than out in the field.
- Inconsistency: Once having retrofit technology becomes a part of doing business, all contractors and sub-contractors will know that if they do not have the technology they are less likely to get the job. This has to become an industry standard to make it an easy choice for contractors.
- Other Vehicles: The contractors only have control over their vehicles, not over those that make deliveries to a site or belong to rental companies or sub-contractors.
- Fuel Costs: Contractors bear the brunt of fuel price changes if they bid a project estimating fuel costs and then costs change.

- Internal Consistency: Municipalities are unlikely to require something on their projects that they haven't committed to doing on their own machines. Doing so could be very difficult politically.

### **Suggestions from Group Discussion**

- If contractors are willing to implement retrofits, and the hiring organizations want them to, the two should split the cost.
- Want uniform contracting language and requirements across organizations.
- GB3 could ease the way for groups that want to put these requirements in their bid specs by having additional conversation with and outreach to contractors.
- Have contractors themselves present success stories to other contractors and institutions.
- Minimize either initial purchasing cost or maintenance costs for retrofits.
- Maybe solicit and evaluate ideas on a project-by-project basis, looking at costs and benefits.
- Coordinate with the Northeast Diesel Collaborative (NEDC) for project funding and outreach.
- Bring rental companies into this conversation about retrofits.
- Develop a white paper to give guidance to private owners like hospitals, universities, and cities to help them to write their bid spec and implement a program.
- Harvard is looking into storing fuel on site to reduce the cost of construction.
- In order to get cleaner trucks driving to and from sites, perhaps in contract language institutions could require trucks to pass opacity tests. The DMV in Connecticut has such tests, and many large construction companies there do their own opacity tests.
- Have a recognition program for contractors that use retrofits, like EPA's Smartway program.
- Consider retrofits as something you could win points for in bids.
- Municipalities can focus on evaluating the environmental aspects of a job such as whether a contractor is using new equipment, whether he has added on control technologies, whether the machinery is idling, what kind of fuel is being used. This type of environmental/health checklist may be easier than writing new language into bid specs.
- Be more flexible, especially on smaller jobs or contractors, by focusing on reducing emissions rather than on how that reduction happens. Part of a bid spec could ask what approaches the company would take to reduce emissions (changing fuel or retrofitting).
- The first step is to do pilot tests with contractors using DOCs and LSD to demonstrate the cost effectiveness as well as the public and environmental health benefits associated with clean diesel construction projects.
- Have informational meetings with contractors to introduce the requirement.

### **Arguments for Retrofits/Bid Specs**

1. Air pollution reduction – public health benefits for community and for workers on a project site
2. Odor reduction
3. Noise reduction
4. Reduction in neighborhood complaints (thereby increasing efficiency)
5. Benefit of already having retrofits for future projects

### **Bid Spec Language Recommendations**

Several participants noted the benefit of having model contracting language for guidance. One participant noted that Connecticut's bid spec language is good, and that when requirements are enforced, companies will comply.

- Need to be flexible.
- Must be *a part of original contract* - requirements can't be put in place after a company has signed a contract. Timing is crucial.
- GB3 could help by drafting guidelines and/or model contracting language to help institutions and municipalities as they develop their requirements.

## APPENDIX A: ATTENDEES AND CONTACT INFORMATION

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